



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

PRELIMINARY ISSUE

D130-1048-041
Job Sheet 182413

Accounting Job RD17-1048-01



Part No: D130-1048-041

Job Qty: 1 ea

Part Name: EC130 Skidtube Assembly, LH



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 8/23/18

Job Tracking No:

Due Date: 9/7/18

Created By: Marie Lajeunesse

Type: R+D

Description:

Note: D130-1048-041 REV.PRELIM-A9 18.08.15 new issue DP Verify DD

Ship Via:

POSITIVE RECALL

EFFECTIVE 18-08-14 AUTH MLC

RELEASED 9-89 DATE 18-10-05

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		9/7/18	0.00	0.00	Start Up Skid tubes-3		MSS
100	Skid tubes	1 pcs		9/7/18	0.00	0.25	Skid tubes-2		MSS
110	QC	1 pcs		9/7/18	0.00	0.00	QC5		MSS 18-08-23
120	Outsource	1 pcs		9/7/18	0.00	0.00	Outsource2		SEP 27 2018
130	Packaging	1 pcs		9/7/18	0.00	0.00	Packaging2		SEP 27 2018
140	QC	1 pcs		9/7/18	0.00	0.00	QC5		SEP 27 2018
150	Skid tubes	1 pcs		9/7/18	0.00	1.00	Skid tubes-2		SEP 27 2018
160	QC	1 pcs		9/7/18	0.00	0.00	QC5		SEP 27 2018
162	Outsource	1 pcs		9/7/18	0.00	0.00	Outsource2		N/A
164	Packaging	1 pcs		9/7/18	0.00	0.00	Packaging2		N/A
166	QC	1 pcs		9/7/18	0.00	0.00	QC6		N/A
170	HandFinish	1 pcs		9/7/18	0.00	0.00	HandFinish1		N/A
180	QC	1 pcs		9/7/18	0.00	0.00	QC7-5		N/A
182	SprayPaint	1 pcs		9/7/18	0.00	0.00	Spray Paint		N/A
184	QC	1 pcs		9/7/18	0.00	0.00	QC14		N/A
190	Skid tubes	1 pcs		9/7/18	0.00	1.00	Skid tubes-2		SEP 27 2018
200	QC	1 pcs		9/7/18	0.00	0.00	QC5		SEP 27 2018
210	HandFinish	1 pcs		9/7/18	0.00	0.10	HandFinish6		N/A
220	QC	1 pcs		9/7/18	0.00	0.00	QC7-5		N/A
230	SprayPaint	1 pcs		9/7/18	0.00	0.50	Spray Paint		N/A
240	QC	1 pcs		9/7/18	0.00	0.00	QC14		N/A
250	HandFinish	1 pcs		9/7/18	0.00	0.17	HandFinish4		N/A
260	QC	1 pcs		9/7/18	0.00	0.00	QC5		N/A
270	Packaging	1 pcs		9/7/18	0.00	0.00	Packaging3		N/A
280	DC	1 pcs		9/7/18	0.00	0.00	DC		N/A
290	QC21-FG	1 Ea		9/7/18	0.00	0.00	QC21		SEP 27 2018

Part Op 100 - 1-Remove bending marks

Descriptions: 120 - Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order

130 - Ensure copy of NDT results attached to work order.

150 - 1-Chamfer AFT end of tube as per DWG sheet 2 note 8. 2-Chamfer FWD end of tube as per DWG sheet 2 note 9.

3-Identify as per note 6. 4-Transfer drill D5571-1 saddle into D5611-1 skid tube. Ensure tube and saddle are within 1

degree of tube C/L. ***Tube and saddle must be at 90 degrees for transfer drilling. 5-Locating from previously transfer

drilled holes cleco DT10416-A. Pilot drill cross bolt spacer holes, 2 AFT wear plate holes and 2 FWD wear plate holes.

6-Cleco DT10431 on two previously drilled FWD wear plate holes and drill remaining four FWD wear plate holes. Cleco

DQA

Date:



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Container No: S113879



Part: D130-1048-041

Job No: 182413

Serial No/Batch: S113879

Revision: A9

Inspector:

Exp Date:

Instructions:

Date: 09/27/18

ION-CONFORMANCE / UPDATE

Work Order update only ☐

QA C

Wo

Date

AGAINST DEPARTMENT/PROCESS					
Work	Skid-tube	Cross tube	Water Jet	Engineering	
ap	Machining	Small Fab	Prod. Eng. Coord.	Quality	
is	Thermoforming	Finishing	Rec/Store/Packaging	Other	
ed	Large Fab	Composite	Supplier		

QTY Effective :

MRB (QSI042) Approval

Description Work Order Deviation

Disposition

Completed By

Lead hand / Supervisor
Approval VerificationQC / QA Coordinator
Approval

Root Cause

Environment	☐	No Re-verification	☐
Design	☐	Operator	☐
Doc/Data	☐	Offset/Setup	☐
Equip/Tooling	☐	Supplier	☐
Handling/Pre	☐	Training	☐
Material	☐	Use for Testing	☐
Internal Transport	☐	Poor Information	☐
Tribal Knowledge	☐	Rushing	☐
LOA	☐	Product Improvement	☐
Substation	☐	Process Improvement	☐
Past Expiry Date	☐	Manufacturing Process	☐
Misidentified	☐	Past Due	☐

FAULT CATEGORY

Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong	☐
Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions	☐
Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance	☐
Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect	☐
Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing	☐
Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved	☐
Crushing	☐	Countersink	☐	Off-set	☐	Drawing	☐
Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish	☐
Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread	☐
Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence	☐

OTHER :

DT10439 on two previously drilled AFT wear plate holes and drill remaining four AFT wear plate holes. 7-Open blade fitting holes and deburr as per note 5. Test fit blade fitting. 8-Open holes section C-C, D-D and E-E to finished size.

- 162 - Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order.
- 164 - Ensure copy of NDT results attached to work order.
- 182 - 1-Prime inside & outside cross tube as per DWG sheet 2 note 2 and QSI 005 4.2.1.3.3 BATCH: _____
- 190 - 1-Wet install saddle as per DWG sheet 1 note 8 and 9. Pro Seal PR-1764 B _____ EXP _____ ***12hr cure time*** 2-Shave rivets as required. 3-Remove chips from inside of tube and clean tube. Prepare for final inspection.
- 210 - Touch up ALODINE. Do not submerge tube in deoxidizer.
- 230 - ***NOTE***do not paint inside saddle bore. Primer only. 1-Paint Outside of Tube as per DWG sheet 1 note 2 and Dart QSI 005 4.2.2.4 BATCH: _____
- 250 - Install inserts as per DWG sheet 1 note 10.
- 270 - Location: _____
- 280 - Photocopy blue file & type labels per PPP D130-1048-041 CHG _____

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D5611-1	EC130 Skidtube	1 Ea (1 ea)	90-Start up Operation	S111368
D5571-1	Saddle	1 Ea (1 ea)	150-Skidtubes	S092439
CR7621S-06-05	Rivet	22 Ea (22 ea)	190-Skidtubes	S102967
ALS4-1032-225	Rivnut	8 Ea (8 ea)	250-HandFinish	S058138

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D5611-1	1	8	0
150-Skidtubes	D5571-1	1	4	0
190-Skidtubes	CR7621S-06-05	22	509	0
250-HandFinish	ALS4-1032-225	8	1,917	0

Part Specifications

Specifications could not be found.

Plex 9/24/18 2:29 PM Dart.lajeunesse.marie

Hawkesbury, ON K64 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartero.com
www.dartero.com

DAI
AEROSPACE

Container No: S113879

Part: D130-1048-041

Job No: 182413

Serial No/Batch: S113879

Revision: A9

Inspector:

Exp Date:

Instructions:

Date: 09/26/18

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

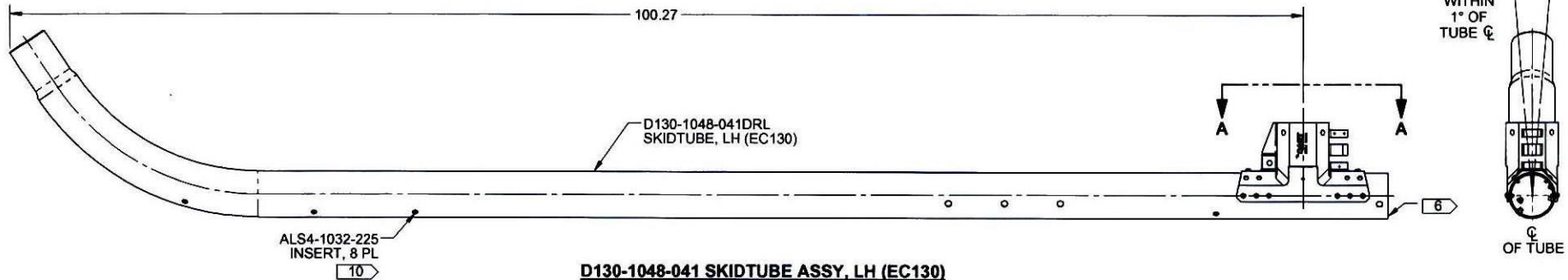
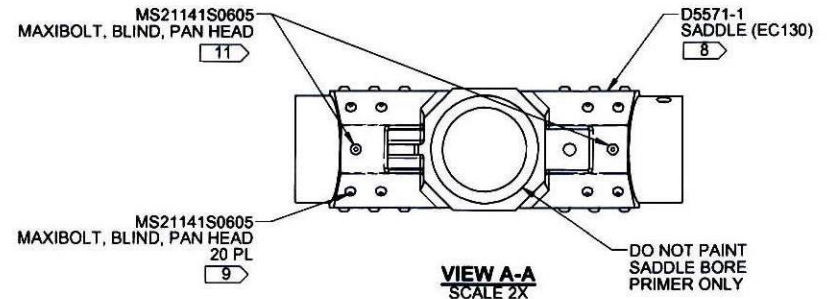
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

QTY -041	P/N	DESCRIPTION
X	D130-1048-041	SKIDTUBE ASSY, LH (EC130)
1	D130-1048-041DRL	SKIDTUBE, LH (EC130)
1	D5571-1	SADDLE (EC130)
22	MS21141S0605 OR CR7621S06-05	MAXIBOLT, BLIND, PAN HEAD
8	ALS4-1032-225	INSERT

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 182413 MWS
18-09-24



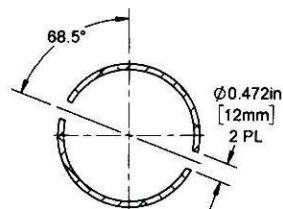
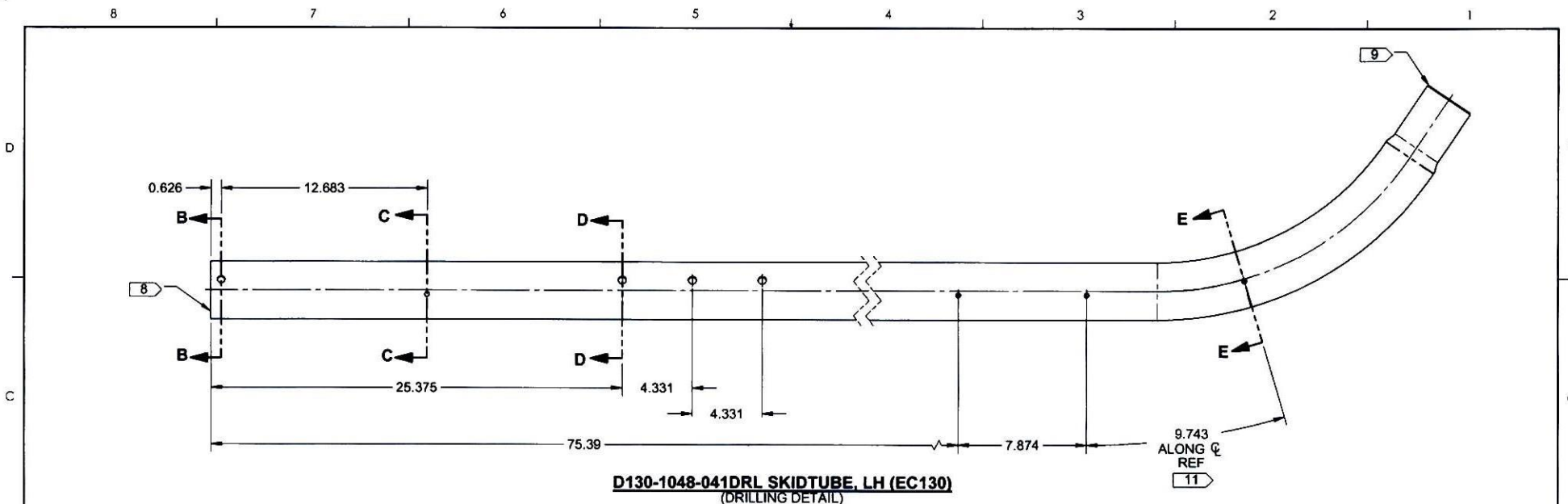
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: PAINT OUTSIDE PER DART QSI 005 4.2.2.4 (FLOAT SKIDTUBE PAINT) AFTER ASSEMBLY
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D130-1048-041" AND S/N PER DART QSI 044 6.4 ON INSIDE OF TUBE, MAX 0.5" FROM AFT END OF TUBE
- 7) WEIGHT: 20.33 lbs
- 8) SEAL FAYING SURFACE WITH SIKAFLEX-241/-291 OR PROSEAL 890 OR EQUIVALENT MIL-S-8802 SEALANT
- 9) POSITION SADDLE AND TRANSFER DRILL $\phi 0.193$ HOLE PATTERN FROM SADDLE ONTO SKIDTUBE. OPEN HOLES THRU SADDLE AND SKIDTUBE TO $\phi 0.199 - \phi 0.202$. TOUCH-UP HOLES WITH CHEMICAL FILM (ALODINE 1200) PER MIL-DTL-5541. WET INSTALL MAXIBOLTS WITH SIKAFLEX-241/-291 OR PROSEAL 890 OR EQUIVALENT MIL-S-8802 SEALANT
- 10) INSTALL ALS4 INSERTS IN EXISTING $\phi 0.297$ HOLES
- 11) TRANSFER DRILL $\phi 0.193$ HOLES FROM SADDLE TO SKIDTUBE. OPEN HOLES THRU SADDLE AND SKIDTUBE TO $\phi 0.199 - \phi 0.202$. ENSURE CLEAN HOLES FOR GOOD ELECTRICAL BONDING. TOUCH-UP HOLES WITH ELECTRICALLY CONDUCTIVE CHEMICAL FILM (ALODINE 600) PER MIL-DTL-5541. INSTALL MAXIBOLTS DRY (NO SEALANT).

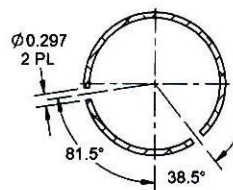
WORK IN PROGRESS

PRELIMINARY ISSUE

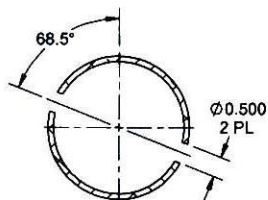
A	NEW ISSUE	ZF	18.05.07
REV.	DESCRIPTION	BY	DATE
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	ZF		
CHECKED	MW	DRAWING NO.	REV. A9
MFG. APPR.	JFS	D130-1048-041	SHEET 1 OF 2
APPROVED		TITLE	SCALE
DE APPR.		SKIDTUBE, LH (EC130)	NTS
DATE	18.05.07	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



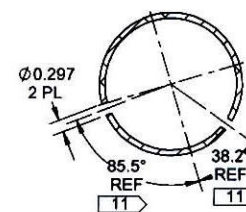
SECTION B-B
SCALE 2X



SECTION C-C
SCALE 2X, 3 PL



SECTION D-D
SCALE 2X, 3 PL



SECTION E-E
SCALE 2X

NOTES:

- 1) MATERIAL: MAKE FROM D5611-1
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2.1.3.3 (FLOAT SKIDTUBE PRIMER)
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.37 lbs
- 8) CHAMFER ID 0.06X0.06 WHERE INDICATED
- 9) CHAMFER OD 0.06X0.06 WHERE INDICATED
- 10) LIQUID PENETRANT INSPECT OUTSIDE SURFACE PER QSI 038 PRIOR TO DRILLING.
- 11) LOCATE HOLES USING DRILLING JIG DT10431.

WORK IN PROGRESS

PRELIMINARY ISSUE

DESIGN	NO	DART AEROSPACE LTD	
DRAWN	ZF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	MW	DRAWING NO.	REV. A
MFG. APPR.	JFS	D130-1048-041	SHEET 2 OF 2
APPROVED		TITLE	SCALE
DE APPR.		SKIDTUBE, LH (EC130)	NTS
DATE	18.05.07	COPYRIGHT © 2018 BY DART AEROSPACE LTD	
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Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO041100**

Supplier: SKY002-VC
Skyservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

PO No: PO041100
PO Date: 9/21/18
Due Date: 9/25/18
Purchase Order
Revision:
Revision Date:
Ship-To Contact: Phone:

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments:

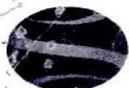
Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	182067	D130-1048-141	EC130 Fwd Crosstube ISSUE P/O: NDT C OF C IS REQUIRED	Firmed	-	9/27/18	1 pcs	0 pcs	1 pcs	\$133.75/pcs	\$133.75
			1 X SEP 27 2018								
	182064		1 X SEP 27 2018	Firmed	-	9/27/18	1 pcs	0 pcs	1 pcs	\$133.75/pcs	\$133.75
	182059		1 X SEP 27 2018	Firmed	-	9/27/18	1 pcs	0 pcs	1 pcs	\$133.75/pcs	\$133.75
	182065		1 X SEP 27 2018	Firmed	-	9/27/18	1 pcs	0 pcs	1 pcs	\$133.75/pcs	\$133.75
Sub Total:							4	0	4		\$535.00
2	182415	D130-1048-042	EC130 Skidtube Assembly, RH Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	9/27/18	1 pcs	0 pcs	1 pcs	\$133.75/pcs	\$133.75
			1 X SEP 27 2018								
	182418		1 X SEP 27 2018	Firmed	-	9/27/18	1 pcs	0 pcs	1 pcs	\$133.75/pcs	\$133.75
Sub Total:							2	0	2		\$267.50
3	182412	D130-1048-041	EC130 Skidtube Assembly, LH Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	9/27/18	1 pcs	0 pcs	1 pcs	\$133.75/pcs	\$133.75
			1 X SEP 27 2018								
	182413		1 X SEP 27 2018	Firmed	-	9/27/18	1 pcs	0 pcs	1 pcs	\$133.75/pcs	\$133.75
Sub Total:							2	0	2		\$267.50
Grand Total:										\$1,070.00	

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 9/27/18 10:09 AM dart.tsimiklis.chrisoula



skyservice Work Order Traveler

Sky Service F.B.O. Inc.

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO37535	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: PO041100
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON:

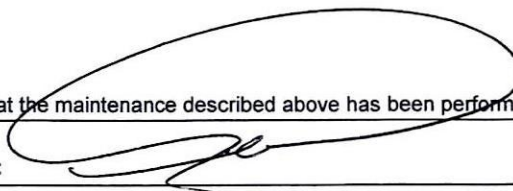
4 EC 130 FWD CROSSTUBES , P/N# D130-1048-141 , J/S# 182059 , 182064 , 182065 , 182067

2 EC 130 SKIDTUBE ASSY RH , P/N# D130-1048-042 , J/S# 182418 , 182419

2 EC 130 SKIDTUBE ASSY LH , P/N# D130-1048-041 , J/S# 182412 , 182413

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417 REV. 16						SEP 21 2018	 
NO CRACK FOUND							
PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923 , DEV. MPO11715 , UV LIGHT M-20142							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp 	Date: SEP 21 2018
Name: RAFIK MELIKIAN		



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO041261**

Supplier: ATE003-VC
Atelier Debosselage
358 Principale
Calumet
QC
J0V 1B0 Canada
Phone: 819 242 5633

PO No: PO041261

PO Date: 10/4/18

Due Date: 10/5/18

Purchase Order

Revision:

Revision Date:

Ship-To Contact: Lavoie, Chantal
Phone: clavoie@dartaero.com

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground

Pymt Terms: Net 30

Freight Terms:

Special Comments:

Items

Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1			Paint d130-1048 crosstube	OUTSIDE SERVICES		Firmed	71900-200-0000	10/5/18	4 Ea	0 Ea	4 Ea	\$250.00/Ea	\$1,000.00
2			Paint d130-1048 skidtube	OUTSIDE SERVICES		Firmed	71900-200-0000	10/5/18	2 Ea	0 Ea	2 Ea	\$250.00/Ea	\$500.00
3			Paint saddle	OUTSIDE SERVICES		Firmed	71900-200-0000	10/5/18	4 Ea	0 Ea	4 Ea	\$40.00/Ea	\$160.00

Grand Total: \$1,660.00

Order Notes

Plex 10/4/18 3:24 PM dart.lavoie.chantal

Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: <u>182413</u> Part No. <u>P130-1048-041</u>	DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☒ Water Jet ☐ Supplier Quality ☐			
Date: <u>18/10/1</u>	Sequence #: _____	QTY Affected: _____		MRB (QSI042) DAS 12 9-89 <u>18/10/1</u>	
Description Work Order Deviation		Disposition		Completed By	
D5611-1 Skid tubes were supplied uncut, ie. total length is over tolerance.		Cut tubes to length per Dwg D5611 Rev.A. Total tube length should be 106.83. Actual length: <u>106.9375</u>		<u>18-10-01</u> Lead hand / Supervisor DAS 9 9-89 <u>18-10-01</u> QC / QA Coordinator DAS 9 9-89 <u>18-10-01</u>	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
		Other/Details: _____			

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>132413</u> Part No. <u>D130-1043-041</u> NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☒									
Date: <u>14/10/2</u>		Step #:		QTY Effective: <u>①</u>			MRB (QSI042) Approval DAS 12 9-89 <u>16/10/2</u>						
Description Work Order Deviation <u>- Prime/print not per dwg or QSI605.</u> <u>- Second LPI not done - step 16Z</u> <u>- Electrically conductive chemical film (Calodine 600) not used.</u>				Disposition <u>- Print is representative and acceptable for testing.</u> <u>Painting P/O: <u>PD0041261</u></u> <u>- Second LPI not req'd for testing</u> <u>- Electrically conductive chemical film not required for testing.</u>				Completed By DAS 12 9-89 <u>14/10/2</u> Lead hand / Supervisor Approval Verification <u>PD 18-10-02</u> QC / QA Coordinator Approval <u>PD 18-10-02</u>					
Root Cause <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; vertical-align: top;"> Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ </td> <td style="width:50%; vertical-align: top;"> No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐ </td> </tr> </table>				Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	FAULT CATEGORY <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%; vertical-align: top;"> Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ </td> <td style="width:33%; vertical-align: top;"> Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ </td> <td style="width:33%; vertical-align: top;"> Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mis-labeled ☐ Fit/Function ☐ Misaligned/off center ☐ </td> <td style="width:33%; vertical-align: top;"> Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐ </td> </tr> </table>				Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mis-labeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
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OTHER: _____													

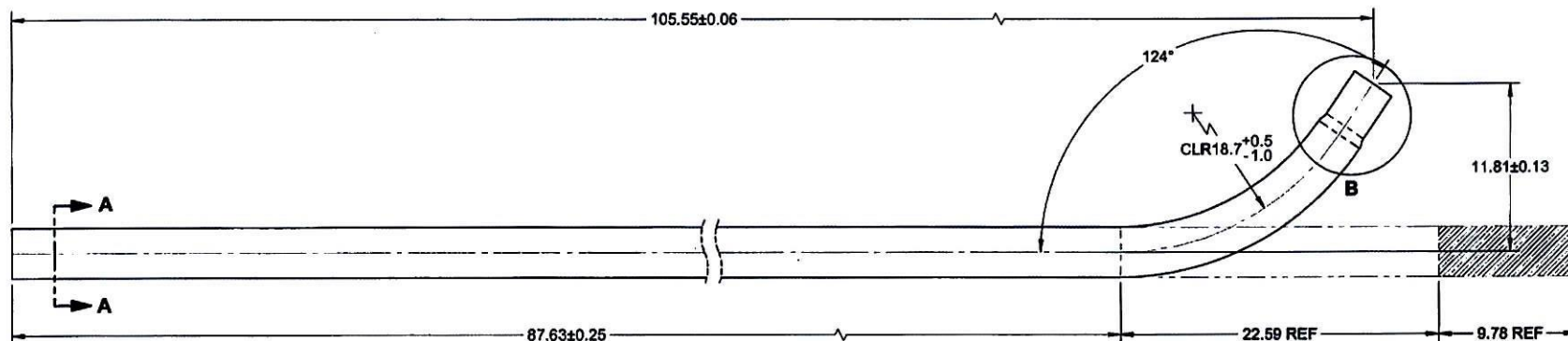


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AEROSPACE

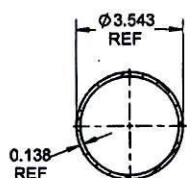
NCR No.

Route update only

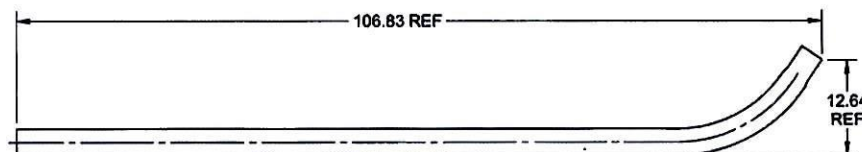
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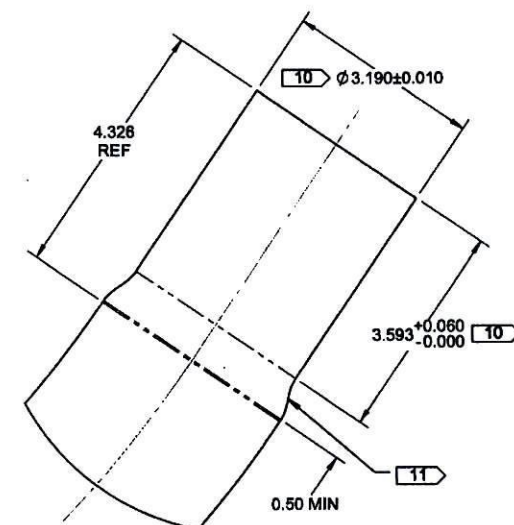
D5611-1 SKIDTUBE (EC130)



SECTION A-A
SCALE 2X



AUXILIARY VIEW
SCALE 0.5X



DETAIL B
SCALE 4X

RELEASED

2018 OCT 02
ECN 14-817

NOTES:

- 1) MATERIAL: MAKE FROM D8031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT EXTRUSION PER DART QSI 005 4.1 PRIOR TO SENDING EXTRUSION TO OUTSIDE VENDOR
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.40 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 10) SWAGE 3.593 +0.060 / -0.000 LENGTH AT THE BENT END OF THE TUBE TO 3.190 ± 0.010
- 11) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

A		NEW ISSUE		ZP		18.05.07	
REV.		DESCRIPTION		BY		DATE	
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		REV. A		SHEET 1 OF 1	
DRAWN	ZF						
CHECKED	MW	DRAWING NO. D5611		SCALE		NTS	
MFG. APPR.	JFS	TITLE					
APPROVED	NO	SKIDTUBE (EC130)					
DE APPR.	CP						
DATE		18.05.07					

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